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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/582,558	06/29/2000	HIROAKI SUDO	JEL-31206	2761

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EXAMINER

ODOM, CURTIS B

ART UNIT PAPER NUMBER

2634

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/582,558

Applicant(s)

SUDO ET AL.

Examiner

Curtis B. Odom

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 19-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bussgang et al. (previously cited in Office Action 3/1/04).

Regarding claim 19, Bussgang et al. discloses a transmission apparatus comprising:

a converting section (Fig. 1, block 12, column 3, line 28-column 4, line 14) to which a first information and a second information are input through different routes (Fig. 1, lines 11, wherein each line is a different route) and that generates an information sequence including the first information and the second information (first and second bits of PCM sample) in which the first information (bit  $X_{01}$ ) is more important than the second information; and

a modulation section (Fig. 1, block 15, column 4, line 15-column 5, line 23) that modulates the first information and the second information to provide a transmission signal in such a way that one symbol is expressed using three or more bits,

wherein a bit corresponding to the first information is arranged on at least the first bit of each symbol of the information sequence (column 5, lines 5-65).

Bussgang et al. does not explicitly disclose a modulation scheme which uses an orthogonal coordinate comprising an in-phase component and a quadrature component and the first information is used for error control.

However, Bussgang et al. does disclose a phase modulator (column 4, line 15-column 5, line 23) using a phase modulation scheme in which one symbol is expressed using three or more bits. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that this phase modulator could have implemented phase modulation schemes such as PSK in which one symbol is expressed using three or more bits on an orthogonal coordinate comprising an in-phase component and a quadrature component. Thus, since PSK is a type of phase modulation, claim 19 does not constitute patentability.

Bussgang et al. also states that a first information (first four bits of a PCM word) are placed in more protected, or less error susceptible, positions in the phase modulator and a second information (last four bits which are less important than the first four bits) are placed in the less protected; or more error-susceptible positions of the phase modulator. Bussgang et al. further states that a suitable match is obtained between more important data and the more protected bit positions in the phase modulation process so that the overall error is reduced (column 5, line 56-column 6, line 4). Bussgang et al. also discloses the entire sequence including the first information is fed to a decoder and error corrector, wherein the entire sequence (including the first information) is used to correct errors in the sequence that may have occurred during transmission (column 11, line 38-column 13, line 38). Thus, it is the understanding of the examiner that the overall reduction in error caused by placing the first information on at least the first bit and using

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the received sequence to correct errors that may have occurred during transmission are forms of error control.

Regarding claim 20, which inherits the limitations of claim 19, Bussgang et al. does not disclose the first information is important according to the level of importance for maintaining a normal connection. However, Bussgang et al. does disclose first information is the most significant information in the PCM data sequence (column 4, lines 1-14). The first bit in the PCM sequence represents information used to process the remainder of the PCM sequence at the receiver. Therefore, it would have been obvious to one skilled in the art that if this bit were damaged during transmission that it may effect the connection between a transmitter and receiver. Thus, claim 20 does not constitute patentability.

Regarding claim 21, which inherits the limitations of claim 19, Bussgang et al. discloses the bit corresponding to the first information is arranged on one or both of the first bit and the second bit of each symbol of the transmission signal (column 5, lines 5-65).

Regarding claim 22, which inherits the limitations of claim 21, Bussgang et al. discloses information to be arranged on one or both of the first bit and the second bit of each symbol of the transmission signal can be changed at any time according to the level of importance (column 5, lines 5-65), wherein the most important bits are placed in the first two bit positions (column 5, lines 57-65).

Regarding claim 23, which inherits the limitations of claim 23, Bussgang et al. discloses the first information is separated (most significant bits) from all information to

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be communicated and the second information (least significant bits) is other than the first information among all the information to be communicated (column 5, lines 5-65).

Regarding claim 24, which inherits the limitations of claim 19, Bussgang et al. does not disclose a circuit that performs inverse Fourier transform processing on the modulated first information and second information. However, it is well known in the art that the inverse Fourier transform simply transforms frequency domain signals into time domain signals. It allows the user to operate in the time domain rather than the frequency domain. Thus, the choice of operating the frequency domain or the time domain is deemed a design choice and does not constitute patentability.

Regarding claim 25, which inherits the limitations of claim 19, Bussgang et al. discloses the base station apparatus transmits the transmission signal via an antenna (Fig. 1, element 16).

Regarding claim 26, which inherits the limitations of claim 19, Bussgang et al. discloses the communication terminal apparatus transmits the transmission signal via an antenna (Fig. 1, element 16).

Regarding claims 27-30, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 19-22.

### ***Conclusion***

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom  
March 14, 2005



**STEPHEN CHIN**  
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